

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61K 7/48, 7/075	A1	(11) International Publication Number: WO 96/17590 (43) International Publication Date: 13 June 1996 (13.06.96)
(21) International Application Number: PCT/US95/15544 (22) International Filing Date: 30 November 1995 (30.11.95) (30) Priority Data: 9424521.4 5 December 1994 (05.12.94) GB (71) Applicant (for all designated States except US): THE PROCTER & GAMBLE COMPANY [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): DIXON, Thomas, Jefferson [US/US]; 1423 Hartwood Drive, Cincinnati, OH 45240 (US). SCHMIDT, Robert, Raymond [US/US]; 504 General Drive, Fort Wright, KY 41011 (US). (74) Agents: REED, T., David et al.; The Procter & Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217 (US).		(81) Designated States: CN, MX, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>
(54) Title: CLEANSING COMPOSITIONS (57) Abstract A personal cleansing composition comprising: (a) from about 1 % to about 40 % by weight of one or more surfactants selected from nonionic, anionic, zwitterionic and amphoteric surfactants and mixtures thereof; (b) from about 0.05 % to about 18 % by weight of lipid; (c) from about 0.5 % to about 20 % of humectant; and (d) water; wherein x has an average value of from about 1 to about 30, y has an average value of from about 10 to about 80 and z has an average value of from about 1 to about 30. The composition is valuable for providing excellent skin moisturisation in combination with a good lather profile and effective skin and hair cleansing.		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo			SE	Sweden
CH	Switzerland	KR	Republic of Korea	SI	Slovenia
CI	Côte d'Ivoire	KZ	Kazakhstan	SK	Slovakia
CM	Cameroon	LI	Liechtenstein	SN	Senegal
CN	China	LK	Sri Lanka	TD	Chad
CS	Czechoslovakia	LU	Luxembourg	TG	Togo
CZ	Czech Republic	LV	Latvia	TJ	Tajikistan
DE	Germany	MC	Monaco	TT	Trinidad and Tobago
DK	Denmark	MD	Republic of Moldova	UA	Ukraine
ES	Spain	MG	Madagascar	US	United States of America
FI	Finland	ML	Mali	UZ	Uzbekistan
FR	France	MN	Mongolia	VN	Viet Nam
GA	Gabon				

CLEANSING COMPOSITIONS

TECHNICAL FIELD

The present invention relates to cleansing compositions. In particular it relates to foam-producing personal cleansing compositions suitable for simultaneously cleansing and conditioning the skin and/or the hair and which may be used, for example, in the form of foam bath preparations, shower products, skin cleansers, hand, face and body cleansers, shampoos, etc.

BACKGROUND OF THE INVENTION

Foaming cosmetic compositions must satisfy a number of criteria including cleansing power, foaming properties and mildness/low irritancy with respect to the skin, hair and the ocular mucosae. Skin is made up of several layers of cells which coat and protect the keratin and collagen fibrous proteins that form the skeleton of its structure. The outermost of these layers, referred to as the stratum corneum, is known to be composed of 250 Å protein bundles surrounded by 80 Å thick layers. Hair similarly has a protective outer coating enclosing the hair fibre which is called the cuticle. Anionic surfactants can penetrate the stratum corneum membrane and the cuticle and, by delipidization destroy membrane integrity. This interference with skin and hair protective membranes can lead to a rough skin feel and eye irritation and may eventually permit the surfactant to interact with the keratin and hair proteins creating irritation and loss of barrier and water retention functions.

Ideal cosmetic cleansers should cleanse the skin or hair gently, without defatting and/or drying the hair and skin and without irritating the ocular mucosae or leaving skin taut after frequent use. Most lathering soaps, shower and bath products, shampoos and bars fail in this respect.

Certain synthetic surfactants are known to be mild. However, a major drawback of most mild synthetic surfactant systems when formulated for shampooing or personal cleansing is poor lather performance compared to the highest shampoo and bar soap standards. Thus, surfactants that are among the mildest, such as sodium lauryl glyceryl ether sulfonate, (AGS), are marginal in lather. The use of known high sudsing anionic surfactants with lather boosters, on the other hand, can yield acceptable lather volume and quality but at the expense of clinical skin mildness. These two facts make the surfactant selection, the lather and mildness benefit formulation process a delicate balancing act.

Despite the many years of research that have been expended by the toiletries industry on personal cleansing, the broad mass of consumers remain dissatisfied by the mildness of present day cleansing compositions, finding, for example, that they have to apply a separate cosmetic lotion or cream moisturizer to the skin after using a shower or bath preparation in order to maintain skin suppleness and hydration and to counteract the delipidizing effect of the cleanser.

Thus a need exists for personal cleansing products which will provide a level of skin conditioning performance in a wash and rinse-off product which previously has only been provided by a separate post-cleansing cosmetic moisturizer, which will not dehydrate the skin or result in loss of skin suppleness, which will produce a foam which is abundant, stable and of high quality, which are effective hair and skin cleansers, and which has good rinsibility characteristics, and which at the same time has stable product and viscosity characteristics and remains fully stable under long term and stressed temperature storage conditions.

SUMMARY OF THE INVENTION

The subject of the present invention is a foam-producing, skin conditioning and cleansing product suitable for personal cleansing of the skin or hair which may be used as foam bath and shower products, skin cleansers and shampoos etc. According to one aspect of the invention, there is provided a personal cleansing composition comprising:

- (a) from about 1% to about 55% by weight of an aqueous matrix comprising one or more surfactants selected from nonionic, anionic, zwitterionic and amphoteric surfactants and mixtures thereof; and
- (b) from about 1% to about 45% by weight of an anisotropic disperse phase comprising polyalkoxy nonionic emulsifier, lipid and humectant;

wherein the disperse phase comprises by weight thereof from about 50% to about 90% humectant, from about 5% to about 40% lipid and from about 0.1% to about 10% of nonionic emulsifier and wherein the nonionic emulsifier has an HLB value of less than about 12 at 25°C.

The compositions herein preferably take the form of oil-in-water dispersions having a viscosity

(Brookfield RVT, Helipath, Spindle TB, 5 rpm, 25°C, 1min) in the range from 10,000 to 40,000

cps and a yield point of at least 50 dynes/cm² (Brookfield RVT, Spindle CP52, Plate Code A,

25°C). All concentrations and ratios herein are by weight of the cleansing composition, unless otherwise specified. Surfactant chain lengths are also on a weight average chain length basis, unless otherwise specified.

The invention relates to a foam-producing, skin conditioning and cleansing composition with excellent skin conditioning performance (soft skin feel and improved moisturisation) combined with excellent mildness to the skin and hair, together with good stability, cleansing ability and superior lathering characteristics (creaminess, abundance, stability). The invention also relates to a wash and rinse-off personal cleansing product having the above conditioning, cleansing, lathering, mildness, rinsibility and stability benefits.

According to one aspect of the invention, the cleansing compositions herein include a disperse phase comprising a select mix of polyalkoxy nonionic emulsifier, lipid and humectant materials, the disperse phase being used in combination with an aqueous matrix comprising mild surfactants which in general terms can be selected from anionic, amphoteric, nonionic and zwitterionic surfactants and mixtures thereof.

An essential component of the compositions herein is a water soluble humectant or mixture of humectants. By water soluble it is intended that suitable humectant materials for incorporation in the compositions according to the present invention should be soluble in

water

at a temperature of 25°C, preferably to at least 10% by weight. Water soluble humectants

are

valuable in the compositions according to the present invention for the provision of skin feel

and

moisturisation benefits. The humectant material is generally present in the compositions according to the invention at a level of from about 0.5% to about 20%, preferably from

about 2%

to about 8%, more preferably from about 3% to about 5% by weight of composition. The humectant material is preferably present in the disperse phase at levels of from about 60%

to

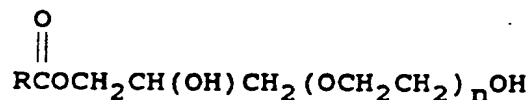
about 80%, preferably from about 65% to about 75% of the disperse phase. Suitable humectant materials are selected from water-soluble polyol nonocclusives and mixtures thereof, especially those having a viscosity of from about 300,000 to about 1,000,000 cps at 25°C.

Some examples of more preferred non-occlusive humectants are glycerine, panthenol, butylene glycol, hexylene glycol, alkoxyated glucose derivatives, hexanetriol, polyethylene glycol, propylene glycol, sorbitol, polyethylene glycol and propylene glycol ethers of methyl glucose (e.g. methyl glucan-20), polyethylene glycol and propylene glycol ethers of lanolin alcohol (e.g. Solulan-75), sodium pyrrolidone carboxylic acid, lactic acid, urea, L-proline, guanidine, pyrrolidone, hydrolyzed protein and other collagen-derived proteins, aloe vera gel and acetamide MEA and mixtures thereof. Of the above, glycerine, 1,2,3-propanetriol available under the trade names CRODEROL GA 7000 (RTM) from Croda Universal Ltd. and EMERY 912 and 916 (RTM) from Henkel/Emery is highly preferred.

A second essential component of the compositions herein is a polyalkoxy nonionic emulsifier. Nonionic emulsifiers are valuable in the compositions according to the invention both for providing the requisite phase characteristics and for the provision of skin feel benefits both in-use and after-use. The nonionic emulsifier is preferably present in the compositions according to the invention at levels of from about 0.01% to about 4.5%, more preferably from about 0.01% to about 0.5%, especially from about 0.025% to about 0.25% by weight of composition. The nonionic emulsifier can be present at a level of preferably from about 0.5% to about 8%, more preferably from about 1% to about 5% by weight of the disperse phase. Suitable nonionic emulsifiers for the compositions of the present invention have an HLB Value in the range of from about 1 to about 15, preferably from about 6 to about 12, more preferably from about 8 to about 12, and especially from about 9 to about 11 wherein the HLB Value represents the 'hydrophile/lipophile balance' and can be assessed by the standard techniques well known in the art. The HLB concept is also described more fully in 'The HLB System', published by ICI Americas Inc, Wilmington, Delaware.

The nonionic emulsifiers are selected from conventional synthetic and oil-derived nonionic emulsifiers. Suitable oil derived nonionic emulsifiers for use herein can be selected from water soluble vegetable and animal-derived emulsifiers such as triglycerides with a polyglycol chain inserted; ethoxylated mono and di-glycerides, polyethoxylated

lanolins and shea butter derivatives. One preferred class of oil-derived nonionic emulsifiers for use herein have the general formula (I)



wherein n is from about 5 to about 200, preferably from about 20 to about 100, more preferably from about 30 to about 85, and wherein R comprises an aliphatic radical having on average from about 5 to 20 carbon atoms, preferably from about 9 to 18 carbon atoms.

Suitable ethoxylated oils and fats of this class include polyethyleneglycol derivatives of glyceryl cocoate, glyceryl caproate, glyceryl caprylate, glyceryl tallowate, glyceryl palmate, glyceryl stearate, glyceryl laurate, glyceryl oleate, glyceryl ricinoleate, and glyceryl fatty esters derived from triglycerides, such as palm oil, almond oil, and corn oil, preferably glyceryl tallowate and glyceryl cocoate.

Suitable oil derived nonionic polymeric emulsifiers of this class are available from Croda Inc. (New York, USA) under their Crovol line of materials such as Crovol EP40 (RTM) (PEG 20 evening primrose glyceride), Crovol EP 70 (PEG 60 evening primrose glyceride), Crovol A-40 (PEG 20 almond glyceride), Crovol A-70 (PEG 60 almond glyceride), Crovol M-40 (PEG 20 maize glyceride), Crovol M-70 (PEG 60 maize glyceride), Crovol PK-40 (PEG 12 palm kernel glyceride), and Crovol PK-70 (PEG 45 palm kernel glyceride) and under their Solan range of materials such as Solan E, E50 and X polyethoxylated lanolins and from ICI under their Synperonic line of materials such as Synperonic PE/L121. Further suitable emulsifiers of this class are commercially available from Sherex Chemical Co. (Dublin, Ohio, USA) under their Varonic LI line of emulsifiers. These include, for example, Varonic LI 48 (polyethylene glycol (n=80) glyceryl tallowate, alternatively referred to as PEG 80 glyceryl tallowate), Varonic LI 2 (PEG 28 glyceryl tallowate), Varonic LI 420 (PEG 200 glyceryl tallowate), and Varonic LI 63 and 67 (PEG 30 and PEG 80 glyceryl cocoates). Other water soluble vegetable-derived emollients suitable for use are PEG derivatives of corn, avocado and babassu oil.

Also suitable for use herein are nonionic emulsifiers derived from composite vegetable fats extracted from the fruit of the Shea Tree (*Butyrospermum Karkii* Kotschy) and derivatives thereof. This vegetable fat, known as Shea Butter is widely used in Central Africa for a variety of means such as soap making and as a barrier cream, it is marketed by Sederma (78610 Le Perray En Yvelines, France). Also of interest are ethoxylated

derivatives of Shea butter available from Karlshamn Chemical Co. (Columbus, Ohio, USA) under their Lipex range of chemicals, such as Lipex 102 E-75 (ethoxylated mono, di-glycerides of Shea butter). Similarly, ethoxylated derivatives of Mango, Cocoa and Illipe butter may be used in compositions according to the invention. Although these are classified as ethoxylated nonionic emulsifiers it is understood that a certain proportion may remain as non-ethoxylated vegetable oil or fat.

Other suitable oil-derived nonionic emulsifiers include ethoxylated derivatives of almond oil, peanut oil, wheat germ oil, linseed oil, jojoba oil, oil of apricot pits, walnuts, palm nuts, pistachio nuts, sesame seeds, rapeseed, cade oil, corn oil, peach pit oil, poppyseed oil, pine oil, castor oil, soybean oil, avocado oil, safflower oil, coconut oil, hazelnut oil, olive oil, grapeseed oil, and sunflower seed oil.

Oil derived nonionic emulsifiers preferred for use herein from the viewpoint of optimum mildness and skin feel characteristics are PEG 60 evening primrose triglycerides; PEG 55 lanolin polyethoxylated derivatives and ethoxylated derivatives of Shea butter.

Highly preferred nonionic polymeric emulsifiers for inclusion in the compositions according to the present invention are the Poloxamer Series of EO-PO condensates (A-B-A type

block copolymers of polyoxyethylene and polyoxypropylene). Preferred for use herein are block

copolymers having the general formula of $(EO)_x(PO)_y(EO)_z$ wherein x has an average value of

from about 1 to about 30, preferably from about 5 to about 30, y has an average value of from

about 10 to about 80, preferably from about 30 to about 70 and z has an average value of from

about 1 to about 30, preferably from about 5 to about 30. Especially preferred for use herein is

the polyoxyethylene - polyoxypropylene copolymer wherein x has an average value of about 21,

y has an average value of about 67 and z has an average value of about 21. These block copolymers are especially valuable in combination with the specified lipid and humectant materials from the viewpoint of providing enhanced skin feel attributes. Thus according to another aspect of the invention there is provided a personal cleansing composition comprising:

- (a) from about 1% to about 40% by weight of one or more surfactants selected from
nonionic, anionic, zwitterionic and amphoteric surfactants and mixtures thereof,
said one or more surfactants comprising at least from about 0.01% to about 4.5%
by
weight of polyoxyethylene-polyoxypropylene block copolymer nonionic emulsifier;
- (b) from about 0.05% to about 18% by weight of lipid;
- (c) from about 0.5% to about 20% by weight of humectant; and
- (d) water.

Suitable examples of polyoxyethylene-polyoxypropylene block copolymers include Poloxamers 403, 402 and 401 available under the trademarks: PLURONIC P123 (RTM), PLURONIC L-122 (RTM) and PLURONIC L-121 (RTM) from BASF and Hodag Nonionic 1123-P (RTM) and Hodag Nonionic 1122-L (RTM) from Calgene and SYNPERONIC PE/L121 (RTM) from ICI.

Other highly preferred nonionic emulsifiers are polyethylene glycol esters of C₁₂-C₂₂ fatty acids. Preferred for use herein are polyethylene glycol esters of stearic acid having the general formula $\text{CH}_3(\text{CH}_2)_{16}\text{CO}(\text{OCH}_2\text{CH}_2)_n\text{OH}$. Highly preferred are polyethylene glycol esters of stearic acid wherein n has an average value of from about 4 to about 12, more preferably from about 5 to about 10, most preferably from about 7 to about 9. Polyethylene glycol esters are valuable in the compositions according to the present invention for providing skin feel attributes in combination with the lipid and humectant materials. Thus according to a further aspect of the present invention there is provided a personal cleansing composition comprising:

- (a) from about 1% to about 40% by weight of one or more surfactants selected from
nonionic, anionic, zwitterionic and amphoteric surfactants and mixtures thereof,
said one or more surfactants comprising at least from about 0.01% to about 4.5%
by weight of polyethylene glycol ester nonionic emulsifier;

- (b) from about 0.05% to about 18% by weight of lipid;
- (c) from about 0.5% to about 20% by weight of humectant; and
- (d) water.

Preferred emulsifiers of this ester type are C₈ - C₂₄ alkyl or alkenyl esters derived from PEG having a molecular weight of from about 200 to about 5000.

Suitable examples of polyethylene glycol esters of stearic acid are available from Witco under their Witconal line of materials under the trade marks WITCONAL 2711 (RTM) and WITCONAL H35A (RTM)(PEG-8 stearate). Additional highly preferred nonionic emulsifiers are polyethylene glycol esters such as PEG-20 methyl glucose distearate available under the tradename Glucam E-20 Distearate (RTM) from Amerchol.

A further essential component of the compositions herein is a lipid material. The lipid material can be present at a level of from about 0.05% to about 18%, preferably from about 0.05% to about 4%, more preferably from about 0.05% to about 2%, most preferably from about 0.1% to about 1% by weight of the composition. The lipid material is present in the disperse phase at a level of preferably from about 8% to about 30%, more preferably from about 10% to about 20% of the disperse phase. Preferred lipid materials for use herein are highly occlusive wherein occlusive is defined as a material which provides a suitable water barrier. The lipid material is valuable in the compositions according to the present invention for the provision of superior skin feel and conditioning benefits.

Suitable highly occlusive lipid materials for use in the compositions according to the present invention include C₁-C₂₄ esters of C₈-C₃₀ fatty acids such as isopropyl myristate and cetyl ricinoleate, beeswax, saturated and unsaturated fatty alcohols such as behenyl alcohol, hydrocarbons such as mineral oils, petrolatum and squalene, fatty sorbitan esters (see US-A-3988255, Seiden, issued October 26th 1976), lanolin and oil-like lanolin derivatives, animal and vegetable triglycerides such as almond oil, peanut oil, wheat germ oil, linseed oil, jojoba oil, oil of apricot pits, walnuts, palm nuts, pistachio nuts, sesame seeds, rapeseed, cade oil, corn oil, peach pit oil, poppyseed oil, pine oil, castor oil, soybean oil, avocado oil, safflower oil, coconut oil, hazelnut oil, olive oil, grapeseed oil, and sunflower seed oil, and C₁-C₂₄ esters of dimer and trimer acids such as diisopropyl dimerate, diisostearylmalate, diisostearyldimerate and trisostearyltrimerate. Of the above,

highly preferred from the viewpoint of optimum lathering and mildness is petrolatum available as petrolatum amber, white or jelly under the trade names AMOJELL (RTM) from Amoco Lubricants; FONOLINE (RTM) from Witco/Sonneborn; Mineral Jelly No's 5,10,15,20,25 (RTM) from Penreco and a variety of further sources.

Preferred from the viewpoint of conditioning effectiveness in a rinse-off application are compositions in the form of oil-in-water dispersions wherein the average size of the disperse phase particles is in the range from about 1 to about 150 microns, preferably from about 2 to about 50 microns. (Particle size being measured by, for example, laser diffraction using, e.g. a Malvern Series 2600.)

In preferred embodiments of the invention the humectant, nonionic emulsifier and lipid material are present in the form of a 'disperse phase' within the composition matrix, the level of disperse phase being from about 1% to about 45%, preferably from about 2% to about 30%, more preferably from about 3% to about 15%, most preferably from about 4% to about 10% by weight of composition. In highly preferred embodiments, moreover, the disperse phase has anisotropic character and is especially a lyotropic liquid crystalline phase. The disperse phase comprises from about 50% to about 90%, preferably from about 60% to about 80%, more preferably from about 65% to about 75% of humectant, from about 5% to about 40%, preferably from about 8% to about 30%, more preferably from about 10% to about 20% of lipid and from about 0.1% to about 10%, preferably from about 0.5% to about 8%, more preferably from about 1% to about 5% by weight of nonionic polymeric emulsifier, the percentages being expressed by weight of the disperse phase. In preferred compositions the humectant, lipid and nonionic emulsifier are glycerin, petrolatum and polyoxyethylene/polyoxypropylene block copolymers such as Pluronic P123(RTM). While the reasons for the skin conditioning and moisturisation benefits of the compositions according to the present invention are not fully understood it is believed that the combination of water-soluble humectant and highly occlusive lipid are delivered to and adsorb into the skin in the form of anisotropic or lyotropic liquid crystals.

In the literature, liquid crystals are also referred to as anisotropic fluids, a fourth state of matter, polymer or surfactant association structure or mesophases. Those terms are often used interchangeably. The term "liquid crystals" as used herein means "lyotropic liquid crystals" unless otherwise specified. The term "lyotropic" means a liquid crystalline system containing a polar solvent. In preferred embodiments herein the polar solvent is water. Lyotropic liquid crystals are to be distinguished from thermotropic, heat,

magnetically induced or cholesteric liquid crystals. The liquid crystals used herein are preferably lamellar, hexagonal, micellar or mixtures thereof.

The liquid crystalline phase can be identified in various ways. A liquid crystal phase flows under shear and is characterised by a viscosity that is significantly different from the viscosity of its isotropic solution phase. Rigid gels do not flow under shear like liquid crystals. Also when viewed with a polarised light microscope, liquid crystals show identifiable birefringence, as for example, planar lamellar birefringence, whereas when isotropic solutions and rigid gels are viewed under polarised light, both show dark fields.

Other suitable means for identifying anisotropic disperse phases include SANS X-ray diffraction, NMR spectroscopy and transmission electron microscopy.

The disperse phase is preferably prepared as a pre-mix of lipid, humectant and nonionic emulsifier, the pre-mix being prepared by heating and stirring the disperse phase ingredients until fully molten followed by cooling and addition to the remainder of the formula.

The compositions herein also include up to about 99%, preferably up to 98% of an aqueous matrix comprising a mild surfactant system which delivers effective lathering characteristics in addition to the superior skin conditioning and moisturisation benefits. Suitable mild surfactants include those having a Relative Skin Barrier Penetration Value of less than about 75, preferably less than about 50 and more preferably less than about 40, Relative Skin Barrier Penetration Value being measured according to the test method set out in EP-A-0203750. Surfactants which have Relative Barrier Penetration Values of greater than 75 can be used along with the mild surfactant at low levels in the compositions of this invention, as long as their use does not significantly change the clinical skin mildness of the total cleansing composition.

The compositions preferably comprise a mixture of anionic and amphoteric surfactants and highly preferred systems also incorporate other nonionic and/or betaine surfactants. Other suitable compositions within the scope of the invention comprise mixtures of anionic with one or more nonionic or betaine surfactants or mixture thereof; and mixtures of amphoteric with one or more nonionic or betaine surfactants or mixture thereof. The level of each of the anionic and amphoteric surfactants is generally in the range from about 1% to about 18%, preferably from about 2% to about 15%, and especially from about 3% to about 12% by weight of the composition. The weight ratio of anionic

surfactant:amphoteric surfactant, on the other hand is generally from about 1:5 to about 20:1, preferably from about 1:2 to about 5:1, and especially from about 1:1 to about 2:1. The total level of anionic and amphoteric surfactants is generally about 5% to about 18%, preferably from about 8% to about 15% by weight of the cleansing composition. The other nonionic or betaine surfactant, on the other hand, preferably constitutes from about 0.1% to about 10%, more preferably from about 1% to about 8% and especially from about 2% to about 5% by weight of the composition. The total level of surfactant, inclusive of anionic, amphoteric, nonionic, betaine and other surfactant components and inclusive of nonionic emulsifier components, is from about 1% to about 40%, preferably from about 5% to about 30% , more preferably from about 10% to about 25%, most preferably from about 15% to about 20% by weight of composition.

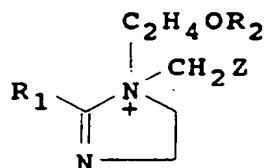
Anionic surfactants suitable for inclusion in the compositions of the invention can generally be described as mild synthetic detergent surfactants and include ethoxylated alkyl sulfates, alkyl glyceryl ether sulfonates, methyl acyl taurates, fatty acyl glycinate, N-acyl glutamates, acyl isethionates, alkyl sulfosuccinates, alpha-sulfonated fatty acids, their salts and/or their esters, alkyl phosphate esters, ethoxylated alkyl phosphate esters, acyl sarcosinates and fatty acid/protein condensates, and mixtures thereof. Alkyl and/or acyl chain lengths for these surfactants are C₈-C₂₂, preferably C₁₀-C₁₈.

Preferred for use herein from the viewpoint of optimum mildness and lathering characteristics are the salts of sulfuric acid esters of the reaction product of 1 mole of a higher fatty alcohol and from about 1 to about 12 moles of ethylene oxide, with sodium and magnesium being the preferred counterions. Particularly preferred are the alkyl sulfates containing from about 2 to 6, preferably 2 to 4 moles of ethylene oxide, such as sodium laureth-2 sulfate, sodium laureth-3 sulfate and magnesium sodium laureth-3.6 sulfate. In preferred embodiments, the anionic surfactant contains at least about 50%, especially at least about 75% by weight of ethoxylated alkyl sulfate. Again, in preferred embodiments, the anionic surfactant counterions are selected from magnesium and mixtures of magnesium with one or more counterions selected from alkali metal, ammonium and alkanolammonium, this being preferred from the viewpoint of providing optimum lathering, mildness, emolliency, viscosity and stability. In preferred embodiments, magnesium is preferably present in an amount equivalent to at least 10 mole %, preferably at least 20 mole % of the anionic surfactant. It will be understood that magnesium can be introduced into the compositions of the invention either as the preformed magnesium or partial magnesium salt of the anionic surfactant, or in the form of a water-soluble, non-surface

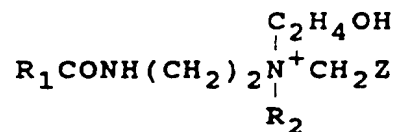
active magnesium salt, for example magnesium chloride, magnesium sulfate or hydrate thereof.

Preferred compositions for use herein also contain an amphoteric surfactant. Amphoteric surfactants suitable for use in the compositions of the invention include:

- (a) imidazolinium surfactants of formula (II)

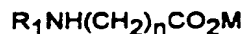


wherein R_1 is C₇-C₂₂ alkyl or alkenyl, R_2 is hydrogen or CH_2Z , each Z is independently CO_2M or $\text{CH}_2\text{CO}_2\text{M}$, and M is H, alkali metal, alkaline earth metal, ammonium or alkanolammonium; and/or ammonium derivatives of formula (III)

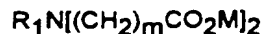


wherein R_1 , R_2 and Z are as defined above;

- (b) aminoalkanoates of formula (IV)



and iminodialkanoates of formula (V)



wherein n and m are numbers from 1 to 4, and R_1 and M are independently selected from the groups specified above; and

- (c) mixtures thereof.

Suitable amphoteric surfactants of type (a) are marketed under the trade name Miranol and are understood to comprise a complex mixture of species. Traditionally, the Miranols have been described as having the general formula II, although the CTFA Cosmetic Ingredient Dictionary, 3rd Edition indicates the non-cyclic structure III. In practice, a complex mixture of cyclic and non-cyclic species is likely to exist and both definitions are given here for sake of completeness. Preferred for use herein, however, are the non-cyclic species.

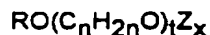
Examples of suitable amphoteric surfactants of type (a) include compounds of formula II and/or III in which R_1 is C_8H_{17} (especially iso-capryl), C_9H_{19} and $C_{11}H_{23}$ alkyl. Especially preferred are the compounds in which R_1 is C_9H_{19} , Z is CO_2M and R_2 is H; the compounds in which R_1 is $C_{11}H_{23}$, Z is CO_2M and R_2 is CH_2CO_2M ; and the compounds in which R_1 is $C_{11}H_{23}$, Z is CO_2M and R_2 is H.

In CTFA nomenclature, materials preferred for use in the present invention include cocoamphocarboxypropionate, cocoamphocarboxy propionic acid, and especially cocoamphoacetate and cocoamphodiacetate (otherwise referred to as cocoamphocarboxyglycinate). Specific commercial products include those sold under the trade names of Empigen CDL60 and CDR 60 (Albright & Wilson), Miranol C2M Conc. N.P., Miranol C2M Conc. O.P., Miranol C2M SF, Miranol CM Special (Miranol, Inc.); Alkateric 2CIB (Alkaril Chemicals); Amphoterge W-2 (Lonza, Inc.); Monateric CDX-38, Monateric CSH-32 (Mona Industries); Rewoteric AM-2C (Rewo Chemical Group); and Schercotic MS-2 (Scher Chemicals).

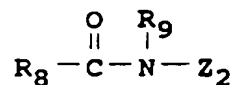
It will be understood that a number of commercially-available amphoteric surfactants of this type are manufactured and sold in the form of electroneutral complexes with, for example, hydroxide counterions or with anionic sulfate or sulfonate surfactants, especially those of the sulfated C_8 - C_{18} alcohol, C_8 - C_{18} ethoxylated alcohol or C_8 - C_{18} acyl glyceride types. Preferred from the viewpoint of mildness and product stability, however, are compositions which are essentially free of (non-ethoxylated) sulfated alcohol surfactants. Note also that the concentrations and weight ratios of the amphoteric surfactants are based herein on the uncomplexed forms of the surfactants, any anionic surfactant counterions being considered as part of the overall anionic surfactant component content.

Examples of suitable amphoteric surfactants of type (b) include salts, especially the triethanolammonium salts and salts of N-lauryl-beta-amino propionic acid and N-lauryl-imino-dipropionic acid. Such materials are sold under the trade name Deriphath by General Mills and Mirataine by Miranol Inc. Amphoterics preferred for use herein, however, are those of formula II and/or III.

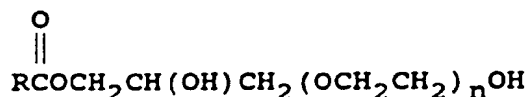
The compositions herein can also contain a nonionic other than the above described nonionic emulsifiers or a betaine surfactant or mixtures thereof. Such other nonionic surfactants will generally have an HLB value in excess of about 12. Preferred herein from the viewpoint of optimum lathering and mildness are nonionic surfactants selected from C₁₂-C₁₄ fatty acid mono- and diethanolamides; alkylpolysaccharides having the general formula (VI)



where Z is a moiety derived from glucose, fructose or galactose, R is C₈-C₁₈ alkyl or alkenyl, n is 2 or 3, t is from 0 to 10 and x is from about 1 to 10, preferably from about 1.5 to 4; polyhydroxy fatty acid amide surfactants having the general formula (VII)



where R₉ is H, C₁-C₈ alkyl or hydroxyalkyl or a group of formula R¹-O-R², R₈ is C₅-C₃₁ hydrocarbyl and Z₂ is a polyhydroxyhydrocarbyl having a linear chain with at least 3 hydroxyls directly connected to said chain, or an alkoxylated derivative thereof; and polyethyleneglycol glyceryl fatty ester surfactants having the formula (VIII)



wherein n is from about 5 to about 200, preferably from about 20 to about 100, more preferably from about 30 to about 85, and wherein R comprises an aliphatic radical having from about 5 to 19 carbon atoms, preferably from about 9 to 17 carbon atoms, more preferably from about 11 to 17 carbon atoms, most preferably from about 11 to 14 carbon atoms; and mixtures of said alkyl polysaccharide, amide or glyceryl fatty ester surfactants.

The preferred alkyl polysaccharides herein are alkylpolyglucosides having the formula VI wherein Z is a glucose residue, R is C₈-C₁₈ alkyl or alkenyl, t is from 0 to 10, preferably 0, n is 2 or 3, preferably 2, and x is from about 1.5 to 4. In the above, x and t are understood to be weight average values and saccharide substitution is preferably at the 1- position of the saccharide. In general terms, C₁₂-C₁₄ alkyl polysaccharides are preferred from the viewpoint of lathering and C₈-C₁₀ alkyl polysaccharides from the viewpoint of skin conditioning.

To prepare these compounds, a long chain alcohol (ROH) can be reacted with glucose, in the presence of an acid catalyst to form the desired glucoside. Alternatively, the alkylpolyglucosides can be prepared by a two step procedure in which a short chain alcohol (C₁₋₈) is reacted with glucose or a polyglucoside (x = 2 to 4) to yield a short chain alkyl glucoside (x = 1 to 4) which can in turn be reacted with a longer chain alcohol (ROH) to displace the short chain alcohol and obtain the desired alkylpolyglucoside. If this two step procedure is used, the short chain alkylglucoside content of the final alkylpolyglucoside material should be less than 50%, preferably less than 10%, more preferably less than 5%, most preferably 0% of the alkylpolyglucoside.

The amount of unreacted alcohol (the free fatty alcohol content) in the desired alkylpolysaccharide surfactant is preferably less than about 2%, more preferably less than about 0.5% by weight of the total of the alkyl polysaccharide plus unreacted alcohol. The amount of alkylmonosaccharide is about 20% to about 70%, preferably 30% to 60%, more preferably 30% to 50% by weight of the total of the alkylpolysaccharide.

The preferred N-alkyl, N-alkoxy or N-aryloxy, polyhydroxy fatty acid amide surfactants according to formula (VIII) are those in which R⁸ is C₅-C₃₁ hydrocarbyl, preferably C₉-C₁₇ hydrocarbyl, including straight-chain and branched chain alkyl and alkenyl, or mixtures thereof and R⁹ is typically C₁-C₈ alkyl or hydroxyalkyl, preferably methyl, or a group of formula -R¹-O-R² wherein R¹ is C₂-C₈ hydrocarbyl including straight-chain, branched-chain and cyclic (including aryl), and is preferably C₂-C₄ alkylene, R² is C₁-C₈ straight-chain, branched-chain and cyclic hydrocarbyl including aryl and oxyhydrocarbyl, and is preferably C₁-C₄ alkyl, especially methyl, or phenyl. Z₂ is a polyhydroxyhydrocarbyl moiety having a linear hydrocarbyl chain with at least 2 (inc the case of glyceraldehyde) or at least 3 hydroxyls (in the case of other reducing sugars) directly connected to the chain, or an alkoxyated derivative (preferably ethoxyated or propoxyated) thereof. Z₂ preferably will be derived from a reducing sugar in a reductive amination reaction, most preferably Z₂ is a glyceryl moiety. Suitable reducing sugars

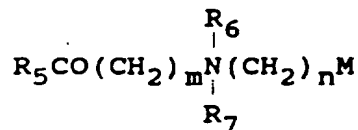
include glucose, fructose, maltose, lactose, galactose, mannose, and xylose, as well as glyceraldehyde. As raw materials, high dextrose corn syrup, high fructose corn syrup, and high maltose corn syrup can be utilized as well as the individual sugars listed above. These corn syrups may yield a mix of sugar components for Z_2 . It should be understood that it is by no means intended to exclude other suitable raw materials. Z_2 preferably will be selected from the group consisting of $-\text{CH}_2-(\text{CHOH})_n-\text{CH}_2\text{OH}$, $-\text{CH}(\text{CH}_2\text{OH})-(\text{CHOH})_{n-1}-\text{CH}_2\text{H}$, $\text{CH}_2(\text{CHOH})_2(\text{CHOR}')\text{CHOH}-\text{CH}_2\text{OH}$, where n is an integer from 1 to 5, inclusive, and R' is H or a cyclic mono- or poly-saccharide, and alkoxyated derivatives thereof. As noted, most preferred are glycityls wherein n is 4, particularly $-\text{CH}_2-(\text{CHOH})_4-\text{CH}_2\text{OH}$.

In compounds of the above formula (VIII), $R_8\text{-CO-N<}$ can be, for example, cocoamide, stearamide, oleamide, lauramide, myristamide, capricamide, palmiamide, tallowamide, etc.

A preferred process for making the above compounds having formula (VIII) comprises reacting a fatty acid triglyceride with an N-substituted polyhydroxy amine in the substantial absence of lower ($\text{C}_1\text{-C}_4$) alcoholic solvent, but preferably with an alkoxyated alcohol or alkoxyated alkyl phenol such as NEODOL and using an alkoxide catalyst at temperatures of from about 50°C to about 140°C to provide high yields (90-98%) of the desired products.

The most preferred polyhydroxy fatty acid amide has the formula $R_8(\text{CO})\text{N}(\text{CH}_3)\text{CH}_2(\text{CHOH})_4\text{CH}_2\text{OH}$ wherein R_8 is a $\text{C}_{11}\text{-C}_{17}$ straight chain alkyl or alkenyl group.

Betaine surfactants suitable for inclusion in the composition of the invention include alkyl betaines of the formula $R_5R_6R_7\text{N}^+(\text{CH}_2)_n\text{M}$ (IX) and amido betaines of the formula (X)



wherein R_5 is $\text{C}_{12}\text{-C}_{22}$ alkyl or alkenyl, R_6 and R_7 are independently $\text{C}_1\text{-C}_3$ alkyl, M is H, alkali metal, alkaline earth metal, ammonium or alkanolammonium, and n, m are each numbers from 1 to 4. Preferred betaines include cocoamidopropyldimethylcarboxymethyl betaine and laurylamidopropyldimethylcarboxymethyl betaine.

Of the above nonionic and betaine surfactants, highly preferred for use herein are the polyhydroxy fatty acid amide surfactants having the general formula VIII, this being preferred from the viewpoint of providing optimum lathering, mildness, emolliency, rinsibility and stability characteristics.

The compositions of the invention preferably also contain from about 0.5% to about 6%, preferably from about 1.5% to about 5% by weight of saturated acyl fatty acids having a weight average chain length of from 10 to 16, preferably from 12 to 14 carbon atoms. Highly preferred is myristic acid. The fatty acid is valuable both from the viewpoint of providing emolliency benefits and also for controlling the viscosity of the final composition.

The compositions according to the present invention may additionally contain a polymer agent or mixture of polymeric agents. Polymeric agents are valuable in compositions according to the present invention for the enhancement of the creaminess and quality of the foam as provided by the mild surfactant system and for provision of additional skin feel benefits other than those delivered via the dispersed phase comprising a water soluble humectant, lipid and emulsifier. Polymeric agents are present in the compositions according to the present invention at a level of from about 0.01% to about 5%, preferably from about 0.04% to about 2% and especially from about 0.05% to about 1% by weight.

Suitable polymers are high molecular weight materials (mass-average molecular weight determined, for instance, by light scattering, being generally from about 2,000 to about 3,000,000, preferably from about 5,000 to about 1,000,000).

Useful polymers are the cationic, nonionic, amphoteric, and anionic polymers useful in the cosmetic field. Preferred are cationic and nonionic polymers used in the cosmetic fields as hair or skin conditioning agents.

Representative classes of polymers include cationic and nonionic polysaccharides; cationic and nonionic homopolymers and copolymers derived from acrylic and/or methacrylic acid; cationic and nonionic cellulose resins; cationic copolymers of dimethyldiallylammonium chloride and acrylic acid; cationic homopolymers of dimethyldiallylammonium chloride; cationic polyalkylene and ethoxypolyalkylene imines; quaternized silicones, and mixtures thereof.

By way of exemplification, cationic polymers suitable for use herein include cationic guar gums such as hydroxypropyl trimethyl ammonium guar gum (d.s. of from 0.11 to 0.22) available commercially under the trade names Jaguar C-14-S(RTM) and Jaguar C-17(RTM) and also Jaguar C-16(RTM), which contains hydroxypropyl substituents (d.s. of from 0.8-1.1) in addition to the above-specified cationic groups, and quaternized cellulose ethers available commercially under the trade names Ucare Polymer JR and Celquat. Other suitable cationic polymers are homopolymers of dimethyldiallylammonium chloride available commercially under the trade name Merquat 100, copolymers of dimethyl aminoethylmethacrylate and acrylamide, copolymers of dimethyldiallylammonium chloride and acrylamide, available commercially under the trade names Merquat 550 and Merquat S, quaternized vinyl pyrrolidone acrylate or methacrylate copolymers of amino alcohol available commercially under the trade name Gatquat, and polyalkyleneimines such as polyethylenimine and ethoxylated polyethylenimine.

Anionic polymers suitable herein include hydrophobically-modified cross-linked polymers of acrylic acid having amphipathic properties as marketed by B F Goodrich under the trade name Pemulen TRI and Pemulen TR2; and the carboxyvinyl polymers sold by B F Goodrich under the trade mark Carbopol and which consist of polymers of acrylic acid cross-linked with polyallyl sucrose or polyallyl pentaerythritol, for example, Carbopol 934, 940 and 950.

The viscosity of the final composition (Brookfield RVT, Spindle 5, 50 rpm, 25°C) is preferably at least about 1,000 cps, more preferably from about 2000 to about 10,000 cps, especially from about 5,000 to about 7,000 cps. Preferred compositions have non-Newtonian viscosity characteristics, however, with a viscosity (Brookfield RVT, Helipath, Spindle T-B, 5 rpm, 25°C, 1 min) in the range of from about 10,000 to about 40,000 cps, more preferably from about 20,000 to about 30,000 cps and a yield point (shear stress at zero shear rate) of at least 50 dynes/cm², preferably at least 100 dynes/cm² (Brookfield RVT, Spindle CP52, Plate Code A, 25°C). In highly preferred embodiments, the composition of the invention also display a shear stress versus temperature profile such that $(S_{45}-S_5)/S_5$ is less than about 0.4, preferably less than about 0.2, and more preferably less than about 0.1, where S_t is the shear stress in dynes/cm² at temperature t (°C) and at a shear rate of 500 sec⁻¹ (Brookfield RVT, Spindle CP52, Plate Code A).

It is a feature of the compositions of the invention that the particular surfactant mixtures employed therein display excellent lathering characteristics even in the presence

of high levels of dispersed oil phase. Although the reasons for this are not fully understood, it is believed to reflect at least in part, the rheological properties of the compositions of the invention and in particular the rheological behaviour of the compositions as they are admixed with water during use.

The cleansing compositions can optionally include an auxiliary hair or skin moisturizing agent which is soluble in the aqueous cleansing composition matrix. The preferred level of auxiliary moisturizing agent is from about 0.5% to about 3% by weight. In preferred embodiments, the auxiliary moisturizing agent is selected from water-soluble liquid polyols and essential amino acid compounds found naturally occurring in the stratum comeum of the skin.

A further optional component of the compositions of the invention is a water-soluble $\text{Ca}^{2+}/\text{Mg}^{2+}$ sequesterant which is preferably added at a level of from about 0.1% to about 5% by weight to provide lather boosting advantages under hard water usage conditions. Suitable sequesterants include polycarboxylates, amino polycarboxylates, polyphosphates, polyphosphonates and aminopolyphosphonates such as ethylenediaminetetraacetic acid, diethylenetriamine pentaacetic acid, citric acid, gluconic acid, pyrophosphoric acid, etc. and their water-soluble salts.

A number of additional optional materials can be added to the cleansing compositions. Such materials include proteins and polypeptides and derivatives thereof; water-soluble or solubilizable preservatives such as DMDM Hydantoin, Germall 115, methyl, ethyl, propyl and butyl esters of hydroxybenzoic acid, EDTA, Euxyl (RTM) K400, Bronopol (2-bromo-2-nitropropane-1,3-diol), sodium benzoate and 2-phenoxyethanol; other moisturizing agents such as hyaluronic acid, chitin, and starch-grafted sodium polyacrylates such as Sanwet (RTM) IM-1000, IM-1500 and IM-2500 available from Celanese Superabsorbent Materials, Portsmouth, VA, USA and described in US-A-4,076,663; solvents such as hexylene glycol and propylene glycol; low temperature phase modifiers such as ammonium ion sources (e.g. NH_4Cl); viscosity control agents such as magnesium sulfate and other electrolytes; colouring agents; pearlescers and opacifiers such as ethylene glycol distearate, TiO_2 and TiO_2 -coated mica; perfumes and perfume solubilizers etc. Water is also present at a level preferably of from about 45% to about 98% preferably at least about 70% by weight of the compositions herein.

The pH of the compositions is preferably from about 4 to about 8, more preferably from about 4.5 to about 6.5, pH being controlled, for example, using a citrate buffer system.

The compositions according to the invention are prepared in the following manner:

the lipid is added to a heated (about 130 - 150°C), stirred (about 160 rpm) tank followed by the nonionic emulsifier and then the humectant. This pre-mix (A) is then allowed to cool to about 110 -120°C with stirring. The main batch (B) is prepared by firstly adding the water to a stirred tank (about 40 rpm) at room temperature. Following addition of any polymers the speed is increased to about 75 rpm and the batch heated to about 150 -160°C and any fatty acid is then added. After increasing the stirring rate to about 100 rpm any fatty alcohol is added. The surfactant materials are added after the stirring rate has decreased to about 60 - 80 rpm, as is the Disodium EDTA. Once the main batch (B) has been prepared and cooled the premix (A) is then added, followed by perfume, dye and other optional ingredients.

The invention is illustrated by the following non-limiting examples. In the examples, all concentrations are on a 100% active basis and the abbreviations have the following designation:

Amphoteric	Empigen CDL 60 - an aqueous mixture of 23.5% cocoamphoacetate(the amphoteric of formula I and/or IV in which R_1 is coconut alkyl, R_2 is H, and Z is CO_2Na) and 1.35% cocoamphodiacetate (the amphoteric of formula I and/or IV in which R_1 is coconut alkyl, R_2 is $\text{CH}_2\text{CO}_2\text{Na}$ and Z is CO_2Na).
Anionic	Sodium laureth-2 sulphate
Nonionic	Polyhydroxy fatty acid amide of formula VII in which R_8 is $\text{C}_{11}\text{-C}_{17}$ alkyl, R_9 is methyl, and Z_2 is $\text{CH}_2(\text{CHOH})_4\text{CH}_2\text{OH}$
Zwitterionic	Cocoamidopropyldimethylcarboxymethyl betaine

Lipid	Petrolatum
Nonionic Emulsifier 1	Poloxamer 403 (RTM)
Nonionic Emulsifier 2	Witconal 2711 (RTM)
Humectant	Glycerine
Polymer	Polymer JR-400 - hydroxyethylcellulose reacted with epichlorohydrin and quaternized with trimethylamine, m.wt. 4×10^6
MA	Myristic Acid
Preservative	Phenoxyethanol
Pearlescer	Disodium ethylene glycol distearate
Oil	Soyabean oil
Mg	Magnesium sulfate heptahydrate

Examples I to V

The following are personal cleansing compositions in the form of shower foam products and which are representative of the present invention:

	I	II	III	IV	V
Amphoteric	5.0	3.0	8.0	8.0	2.5
Anionic	5.0	10.0	6.0	20.0	7.5
Nonionic	5.0	3.0	5.0	-	2.0
Zwitterionic	5.0	4.0	-	16.0	1.0

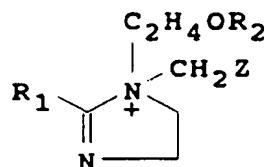
Lipid	1.0	0.75	0.64	1.5	0.8
Emulsifier 1	0.25	0.05	-	0.5	-
Emulsifier 2	-	-	0.16	-	0.2
Humectant	3.75	1.7	7.2	8.0	1.0
Polymer	0.8	0.4	-	0.5	-
MA	2.0	-	1.5	-	1.0
Preservative	0.15	0.15	0.15	0.15	0.15
Pearlescer	0.5	-	-	1.0	1.0
Perfume	1.0	1.5	1.0	2.0	0.5
Water	_____ to 100 _____				

The compositions are made by pre-mixing the lipid, humectant and nonionic emulsifier and blending with the remainder of the formula as described above. The compositions provide excellent skin conditioning performance, have good lather characteristics and are effective hair and skin cleansers.

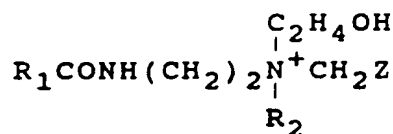
What is Claimed is:

1. A personal cleansing composition comprising:
 - (a) from about 1% to about 40% by weight of one or more surfactants selected from nonionic, anionic, zwitterionic and amphoteric surfactants and mixtures thereof said g the general formula of $(EO)_x(PO)_y(EO)_z$;
 - (b) from about 0.05% to about 18% by weight of lipid;
 - (c) from about 0.5% to about 20% of humectant; and
 - (d) water;wherein x has an average value of from about 1 to about 30, y has an average value of from about 10 to about 80 and z has an average value of from about 1 to about 30.
2. A composition according to Claim 1 wherein the composition is in the form of an oil-in-water dispersion having a viscosity (Brookfield RVT, Helipath, Spindle TB, 5 rpm, 25°C, 1 min) in the range from 10,000 to 40,000 cps and a yield point of at least 50 dynes/cm² (Brookfield RVT, Spindle CP52, Plate Code A, 25°C).
3. A composition according to any of Claims 1 to 2 wherein the anionic surfactant is selected from ethoxylated alkyl sulfates, alkyl glyceryl ether sulfonates, methyl acyl taurates, fatty acyl glycinate, N-acyl glutamates, acyl isethionates, alkyl sulfosuccinates, alpha-sulfonated fatty acids, their salts and/or their esters, alkyl ethoxy carboxylates, alkyl phosphate esters, ethoxylated alkyl phosphate esters, acyl sarcosinates and fatty acid/protein condensates, and mixtures thereof.
4. A composition according to any of Claims 1 to 3 comprising a mixture of anionic surfactant and amphoteric surfactant each in a level of from about 1% to about 15%, preferably from about 2% to about 13% by weight.
5. A composition according to any of Claims 1 to 4 wherein the anionic surfactant comprises an ethoxylated C₈-C₂₂ alkyl sulfate.
6. A composition according to any of Claims 1 to 5 wherein the amphoteric surfactant is selected from:

(a) imidazolinium derivatives of formula (I)

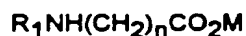


wherein R_1 is C₇-C₂₂ alkyl or alkenyl, R_2 is hydrogen or CH₂Z, each Z is independently CO₂M or CH₂CO₂M, and M is H, alkali metal, alkaline earth metal, ammonium or alkanolammonium; and/or ammonium derivatives of formula (II)

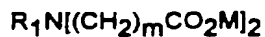


wherein R_1 , R_2 and Z are as defined above:

(b) aminoalkanoates of formula (III)



and iminodialkanoates of formula (IV)



wherein n and m are numbers from 1 to 4, and R_1 and M are independently selected from the groups specified in (a) above; and

(c) mixtures thereof.

7. A composition according to Claim 6 wherein the amphoteric is selected from the imidazolinium derivatives of formula I and/or ammonium derivatives of formula II.

8. A composition according to any of Claims 1 to 7 wherein the weight ratio of anionic surfactant:amphoteric surfactant is in the range from about 1:2 to about 5:1.
9. A composition according to Claim 8 wherever the weight ratio of anionic surfactant:amphoteric surfactant is in the range from about 1:1 to about 2:1.
10. A composition according to any of Claims 1 to 9 wherein the anionic surfactant and amphoteric surfactant together comprise from about 5% to about 20%, preferably from about 8% to about 15% by weight of composition.
11. A composition according to any of Claims 1 to 10 wherein the nonionic emulsifier is present at a level of from about 0.01% to about 4.5%, preferably from about 0.01% to about 0.5% by weight of composition.
12. A composition according to any of Claims 1 to 11 wherein the nonionic emulsifier has a HLB value in the range of from 9 to 11.
13. A composition according to any of Claims 1 to 12 wherein the nonionic emulsifier is selected from EO-PO condensates wherein x has an average value of about 21, y has an average value of about 67 and z has an average value of about 21.
14. A composition according to any of Claims 1 to 13 wherein the humectant is present at a level of from about 2% to about 8%, preferably from about 3% to about 5% by weight of composition.
15. A composition according to any of Claims 1 to 14 wherein the humectant is selected from glycerin, propylene glycol and sorbitol and mixtures thereof.
16. A composition according to any of Claims 1 to 15 wherein the humectant is glycerin.
17. A composition according to any of Claims 1 to 16 wherein the lipid material is present at a level of from about 0.05% to about 4%, preferably about 0.05% to about 2%, more preferably from about 0.1% to about 1% by weight of composition and is selected from petrolatum, mineral oils, and C₁-C₂₄ esters of C₈-C₃₀ fatty acids and mixtures thereof.

18. A composition according to any of Claims 1 to 17 wherein the lipid material is petrolatum.
19. A composition according to any of Claims 1 to 18 wherein the total level of humectant, lipid and nonionic emulsifier is from about 2% to about 30%, preferably from about 3% to about 15%, more preferably from about 4% to about 10% by weight of composition.
20. A composition according to any of Claims 1 to 19 additionally comprising from 0.01% to 5%, preferably from about 0.04% to about 2% and more preferably from 0.05% to 1% of a cationic or nonionic polymeric skin or hair conditioning agent, selected from cationic and nonionic polysaccharides; cationic and nonionic homopolymers and copolymers derived from acrylic and/or methacrylic acid, cationic and nonionic cellulose resins; cationic copolymers of dimethyldiallylammonium chloride and acrylic acid; cationic homopolymers of dimethyldiallylammonium chloride; cationic polyalkylene and ethoxypolyalkylene imines; quaternized silicones, and mixtures thereof.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/15544

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : A61K 7/48, 7/075

US CL : 424/401, 70.19, 70.21, 70.22, 70.24, 70.31

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/401, 70.19, 70.21, 70.22, 70.24, 70.31

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 4,902,499 (BOLISH, JR. ET AL.) 20 February 1990, column 4, lines 25-65, columns 5-6, column 10, column 11, lines 20-50, column 12, lines 15-20.	1-3
X	US, A, 5,100,657 (ANSHER-JACKSON ET AL.) 31 March 1992, column 6, lines 30-65, columns 7-8, column 20, lines 40-65, column 21 lines 5-40.	1-3



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
* A* document defining the general state of the art which is not considered to be of particular relevance	X*	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
* E* earlier document published on or after the international filing date	Y*	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
* L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	* A*	document member of the same patent family
* O* document referring to an oral disclosure, use, exhibition or other means		
* P* document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

22 FEBRUARY 1995

Date of mailing of the international search report

06 MAR 1996

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

J. VENKAT

Telephone No. (703) 308-2351

Suhrah Freese for

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/15544

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☒ Claims Nos.: 4-20
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.